What is Claimed:

1. A method for detecting carbon monoxide in air comprising contacting the air with a sensor element which incorporates a composition formed from $Ni_xCo_{1-x}O_y$, where x is from 0.1 to 0.9 and y is 4x; and monitoring one or more electrical properties of the sensor element.

2. The method of claim 1 further comprising monitoring a change in one or more electrical properties of the element.

3. The method of claim 1 wherein the electrical property is resistance.

4. The method of claim 1 wherein x is from 0.2 to 0.5 and y is from 0.8 to 2.0.

5. The method of claim 4 wherein the sensor element comprises $NiCo_2O_4$.

6. The method of claim 5 wherein the sensor element consists essentially of $NiCo_2O_4$.

7. The method of claim 1 wherein the sensor element is a film or layer.

8. The method of claim 7 wherein the film or layer comprises $NiCo_2O_4$.

9. The method of claim 1 wherein the sensor element is formed by thermal decomposition of a mixture of cobalt and nickel nitrates applied to a nickel foil substrate.

10. The method of claim 1 wherein the sensor element is formed by thermal decomposition of a mixture of cobalt and nickel nitrates applied to a ceramic

substrate.

11. The method of claims 9 or 10 wherein the film or layer is made by forming a gel of cobalt nitrate and nickel nitrate in a stoichiometric ratio by evaporation of a solution of the mixed nitrates on the substrate and drying and heating the gel at from 250 °C to 650 °C to form a film or layer having the formula $Ni_xCo_{1-x}O_y$ on the substrate.

12. The method of claim 1 wherein the sensor element further comprises palladium as a surface or bulk additive.

13. The method of claim 12 wherein the sensor element comprises 1 to 5% palladium by weight.

14. The method of claim 1 wherein the sensor element is a film or a layer and comprises graphite powder.

15. The method of claim 14 wherein the sensor element comprises 5 to 20% graphite powder by weight; and wherein the graphite powder has an average particle size less than one micron.

16. The method of claim 1 wherein a voltage is applied across the sensor element and, when carbon monoxide is detected, the resistance of the sensor element increases and the current through the sensor element decreases; and triggering an alarm or warning when the current decreases below a predetermined level.

17. The method of claim 16 wherein the change in the current passing through the sensor element is continuously monitored and displayed as a record of carbon monoxide levels.

18. A device for monitoring carbon monoxide levels in air, wherein the device includes a sensor element having a film or layer comprising $Ni_xCo_{1-x}O_y$, where x is from 0.1 to 0.9 and y is 4x.

19. The device of claim 18 wherein an electrical property is monitored and the electrical property is resistance.

20. The device of claim 18 wherein x is from 0.2 to 0.5 and y is from 0.8 to 2.0.

21. The device of claim 20 wherein the sensor element comprises $NiCo_2O_4$.

22. The device of claim 20 wherein the sensor element consists essentially of $NiCo_2O_4$.

23. The device of claim 18 wherein the sensor element includes a substrate comprising a film or layer of $Ni_xCo_{1-x}O_y$ and electrodes attached to the film or layer.

24. The device of claim 23 wherein the film or layer consists essentially of $NiCo_2O_4$.

25. The device of claim 24 wherein the electrodes are gold.

26. The device of claim 25 wherein a voltage is applied to the sensor element and the current flow is monitored.

27. The device of claim 23 wherein the film or layer is formed by thermal decomposition of solutions of the metal nitrates onto a substrate.

28. The device of claim 27 wherein the metal nitrates comprise a mixture of cobalt and nickel nitrates.

29. The device of claim 28 wherein the film or layer is made by forming a gel of cobalt nitrate and nickel nitrate in a stoichiometric ratio by evaporation of a solution of the mixed nitrates on the substrate and drying and heating the gel at from 250 °C to 650 °C to form a film or layer having the formula $Ni_xCo_{1-x}O_y$ on the substrate.

30. The device of claim 29 wherein the substrate is nickel foil.

31. The device of claim 29 wherein the film or layer is formed by electrostatic spray deposition.

32. The device of claim 18 wherein when the level of carbon monoxide exceeds a predetermined level, the device emits an alarm or warning.

33. The device of claim 19 wherein when the level of carbon monoxide exceeds a predetermined level, the device emits an alarm or warning.

34. The device of claim 29 wherein the film or layer further comprises palladium as a surface or bulk additive.

35. The device of claim 34 wherein the sensor element comprises 1 to 5% palladium by weight.

36. The device of claim 29 wherein the sensor element is a film or a layer and comprises graphite powder.

37. The device of claim 36 wherein the sensor element comprises 5 to 20% graphite powder by weight; and wherein the graphite powder has an average particle size less than one micron.

38. The device of claim 18 wherein a voltage is applied across the sensor element and, when carbon monoxide is detected, the resistance of the sensor element increases and the current through the sensor element decreases; and triggering an alarm or warning when the current decreases below a predetermined level.

39. The device of claim 18 wherein the change in the current passing through the sensor element is continuously monitored and displayed as a record of carbon monoxide levels.

40. The device of claim 18 further comprising a reference sensor element.